Mission Summary

Genesis Pre-TD7/GERT
IFEX Research Mission Summary
050722I Aircraft: N43RF

Scientific Crew:

Lead Project Scientist	Michael Black
Radar Scientist	Michael Black
Workstation Scientist	Krystal Valde
Cloud Physics	Aaron Bansamer
AXBT/SFMR Scientist	Aaron Bansamer

Aircraft Crew:

Pilots	Phil Kennedy, Barry Choy, Mark Nelson
Flight Engineers	Greg Bast
Navigators	Pete Siegel
Flight Director	Marty Mayeaux, Tom Shepherd
Engineers	Terry Lynch, Damon San Souci

Mission Brief:

This would be the first of several genesis missions into a strong tropical wave located near the Yucatan Peninsula of Mexico and which was forecast to move into the southern Gulf of Mexico where possible development into a tropical cyclone was possible. The convection associated with the wave had been propagating to the NW as we first observed it off the east coast of Nicaragua a day or two before.

Since the NOAA aircraft did not have diplomatic clearance to over fly Mexico, the flight would have to be conducted over water adjacent to both the east and west coasts of the peninsula. Takeoff (0000 UTC) and recovery (9 h later) would be from MacDill AFB, Florida and a portion of the flight would be coordinated with the NASA ER2, which was operating out of San Jose, Costa Rica. The flight altitude would be 12,000 ft and we planned on dropping about 20 GPS sondes and 3 AXBTs. The planned flight plan is in Fig. 1.

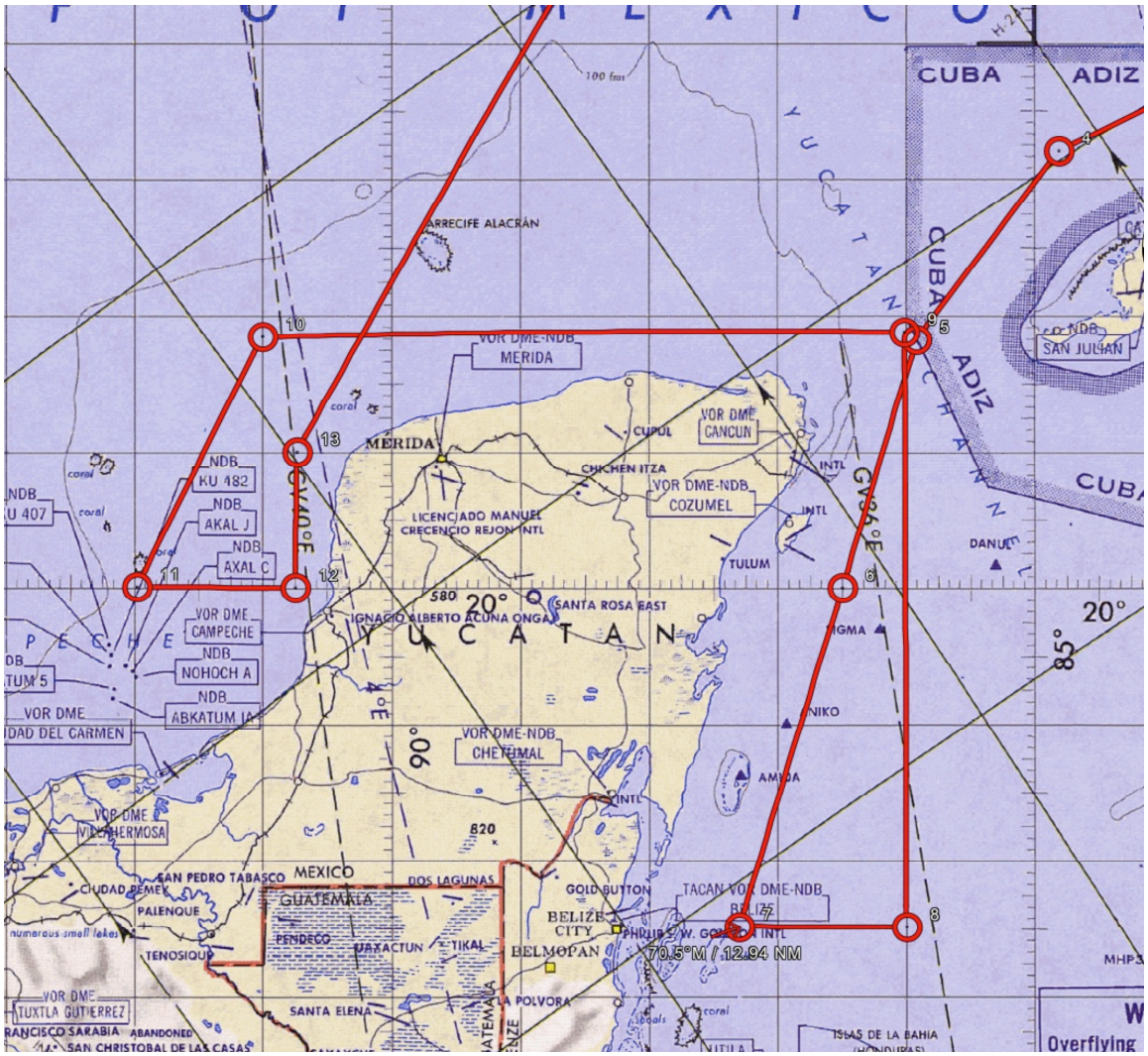

Fig. 1: Planned flight track of NOAA43 beginning on the east side of the Yucatan Peninsula and ending on the west side.

Mission Synopsis:

Takeoff from MacDill was at 0003 UTC and NOAA43 headed southward for the Initial Point (IP) in the Yucatan Channel. We reached the IP at 0151 UTC where we descended to our operational altitude of 12,000 ft and released our first dropsonde. Winds here were out of the Se at about 30 kt. We continued heading southward along the east coast of the Yuctan where we encountered a vigorous E-W oriented rainband near 19° N, 87° W at 0240 UTC. As we tracked southward the winds backed more out of the east and weakened. At 0254 UTC we were once again in vigorous convection and by 0320 UTC, when we cut our leg somewhat short to coordinate with the ER2, we were between bands.

We headed back to the north further offshore than our southbound leg and were now in a position to coordinate the rest of the mission with the ER2, which was catching up with

us on our track at 0340 UTC. Our estimate of the closest approach of the NASA plane was at 0356 when we were in stratiform precipitation and running the tail radar in continuous mode.

We intercepted our NE point in the Yucatan Channel at 0412 and tracked west along the north shore. Flight-level winds were once again out of the SE at 30 kt. Although a large MCS had propagated through this area earlier in the day, the area was now free of precipitation.

NOAA43, along with the ER2, continued around to the west side of the Yucatan where NE winds and even weak westerly winds were measured at flight-level although these winds were not sampled by the dropsonde distribution. The winds from the dropsondes showed mainly easterly winds of about 20 kt on the peninsula's west side. We finished the main part of our pattern at 0608 UTC where, we headed back to MacDill and landed at 0820 UTC.

We released 20 GPS dropsondes and 3 AXBTs, all in the western portion of our pattern which measured SST from 28°-29°C.

Problems:
Two of the sondes did not have launch detects (no data) which we backed up with additional sondes. The radars system had to be reset a couple of times resulting in a loss of data for a few minutes on each occurrence. The main data system had intermittent problems with erroneous winds and had to be reset several times before totally failing near the end of the mission. The wind data will need to be carefully scrutinized in order to be useful.

Michael Black
8/14/05

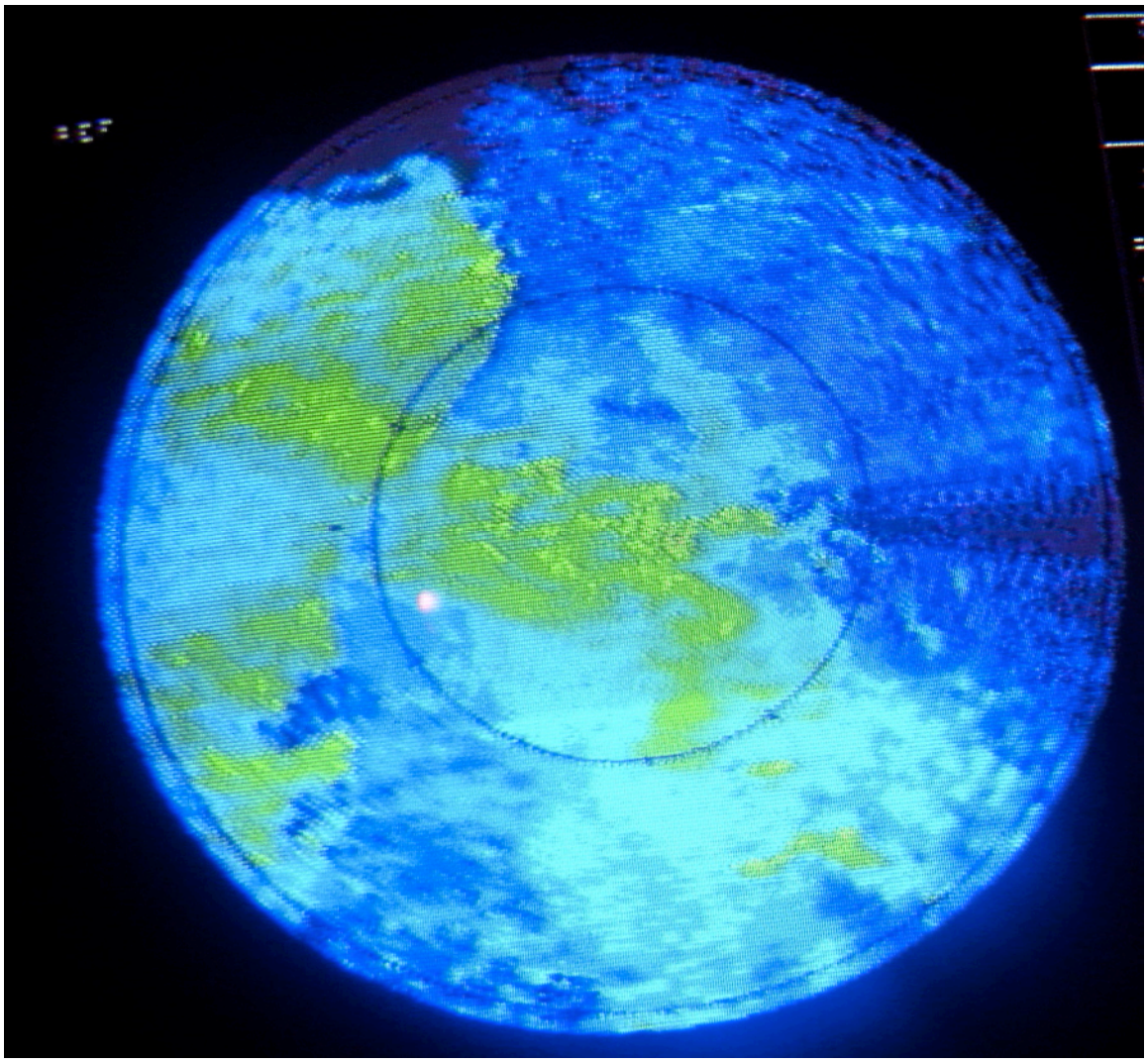

Fig. 2: LF radar image (screen photo) at 0214 UTC. Range rings are 50 nmi.

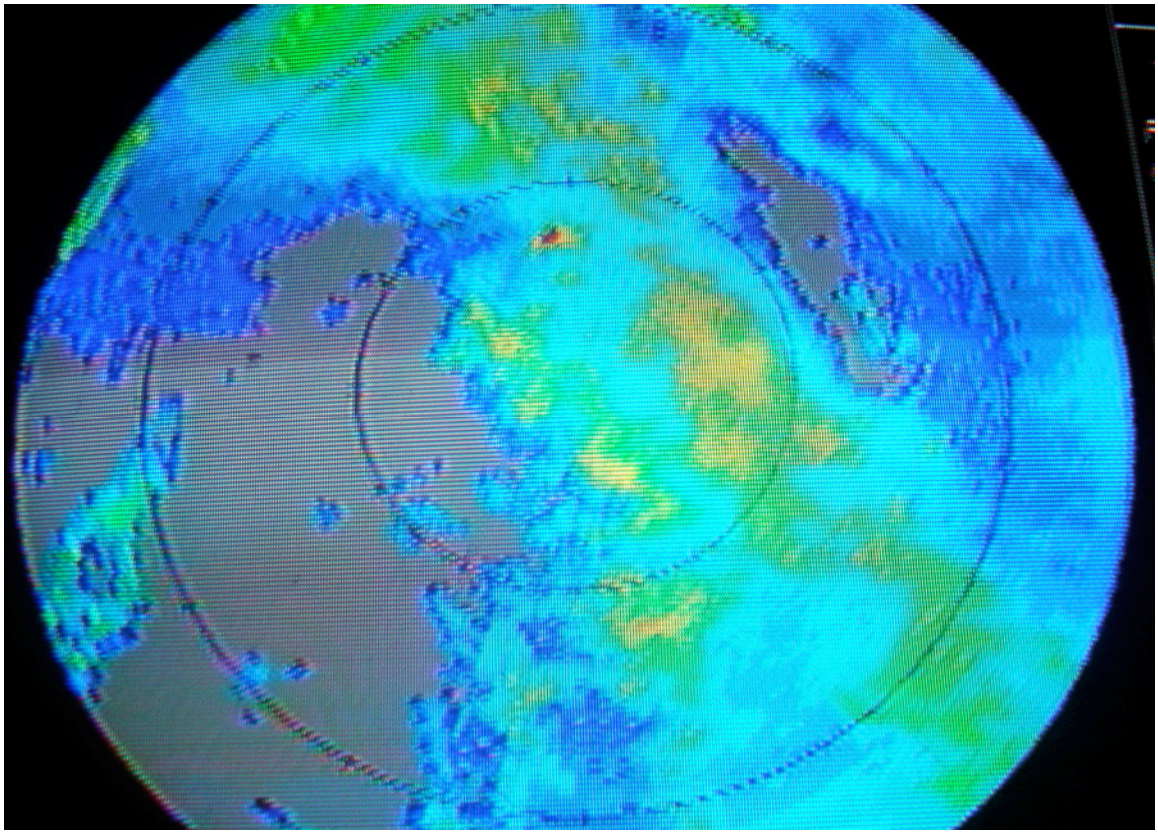

Fig. 3: LF radar image (screen photo) at 0252 UTC showing the large area of convection and stratiform precipitation east of the Yucatan. Range rings are 50 nmi

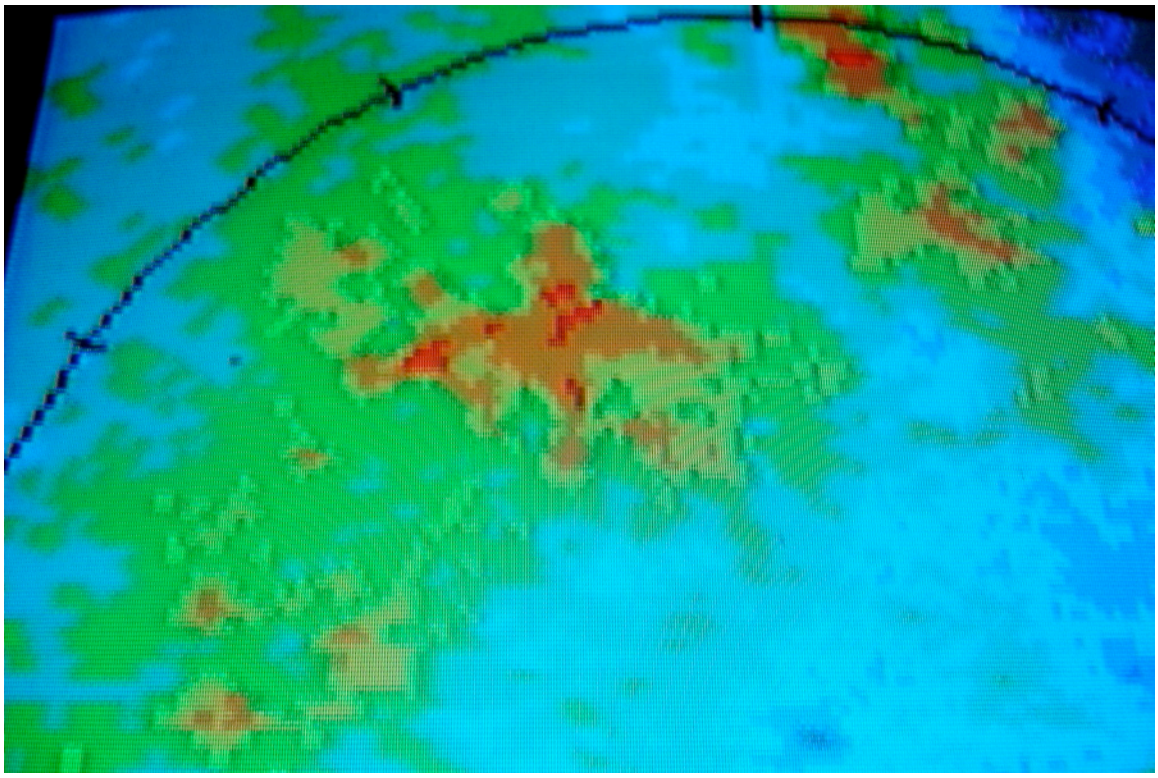

Fig. 4: Zoomed LF radar image (screen photo) at 0322 UTC showing some of the convective cells in the bands east of the Yucatan.

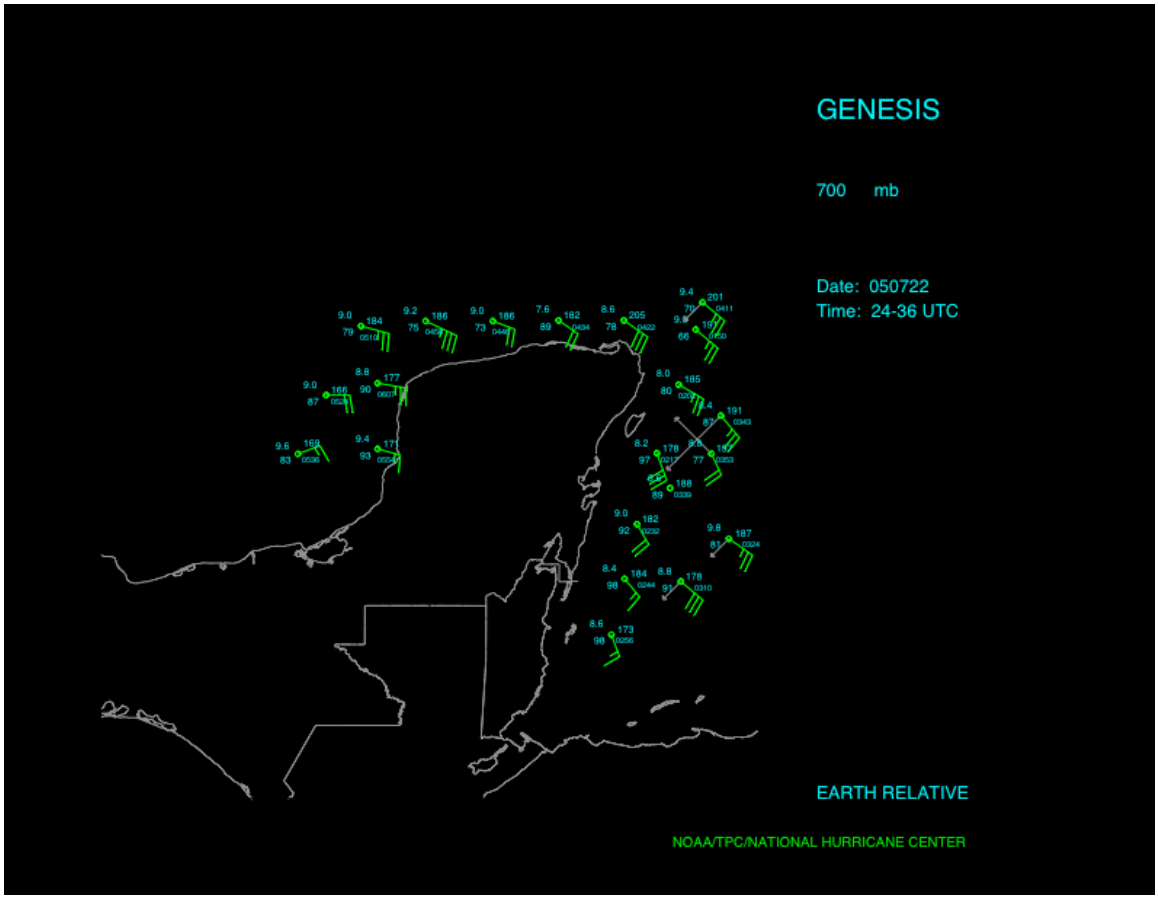

Fig. 5: 700 mb dropsonde observations.

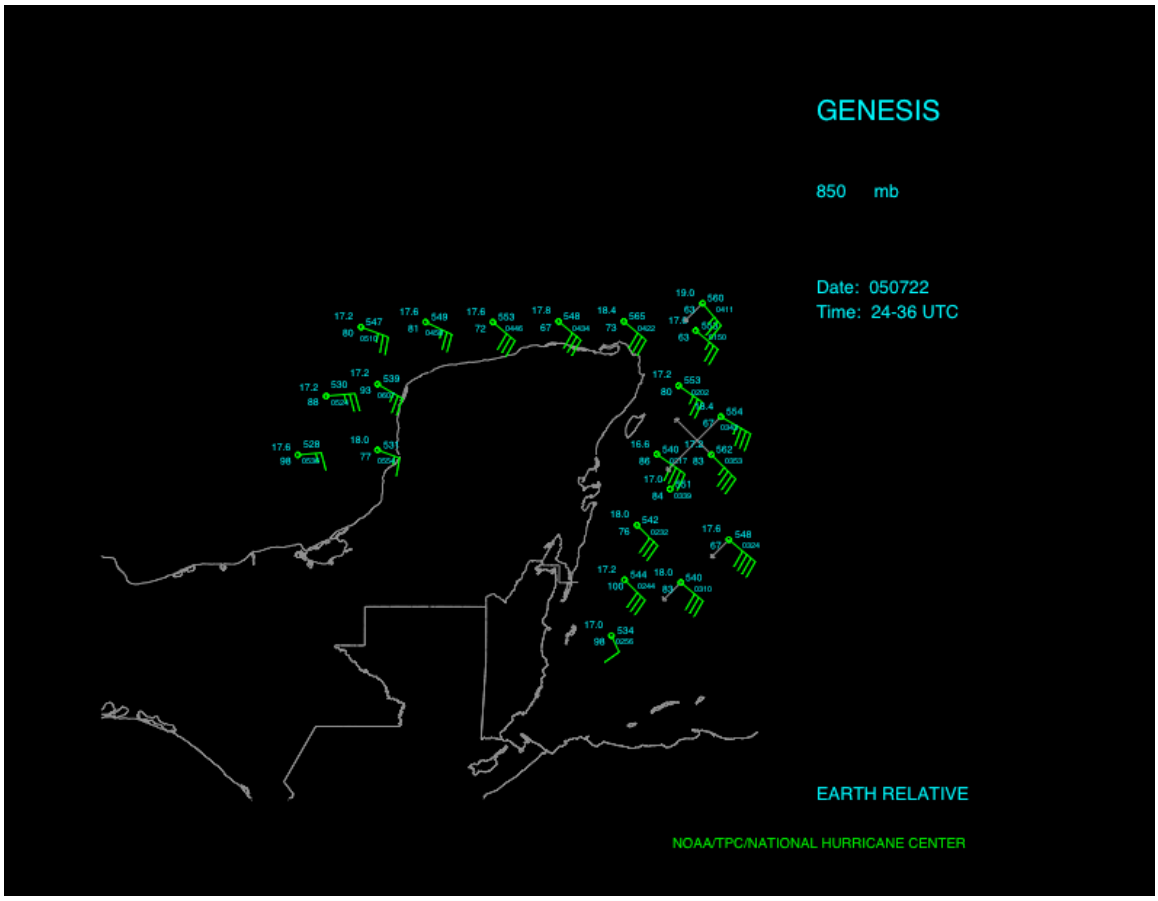

Fig. 6: 850 mb dropsonde observations.

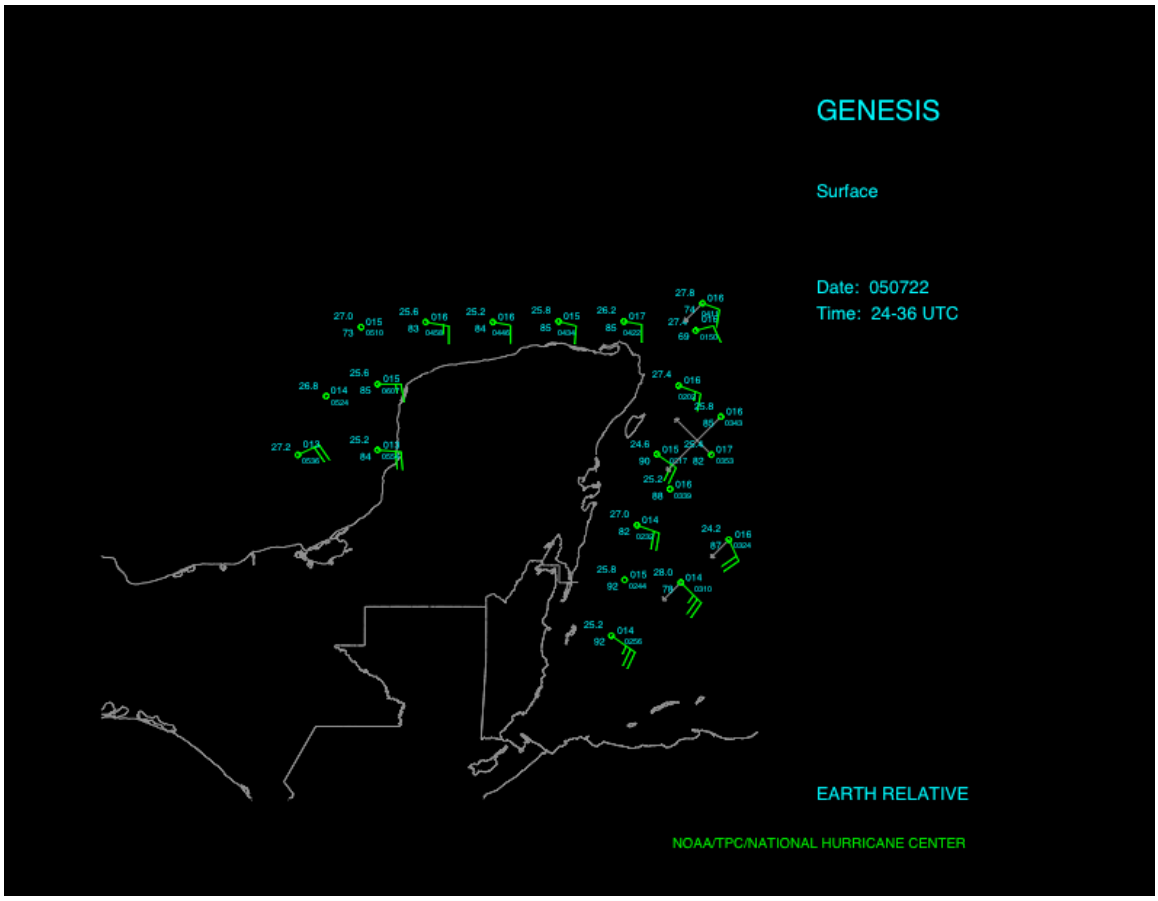

Fig. 7: Surface dropsonde observations.

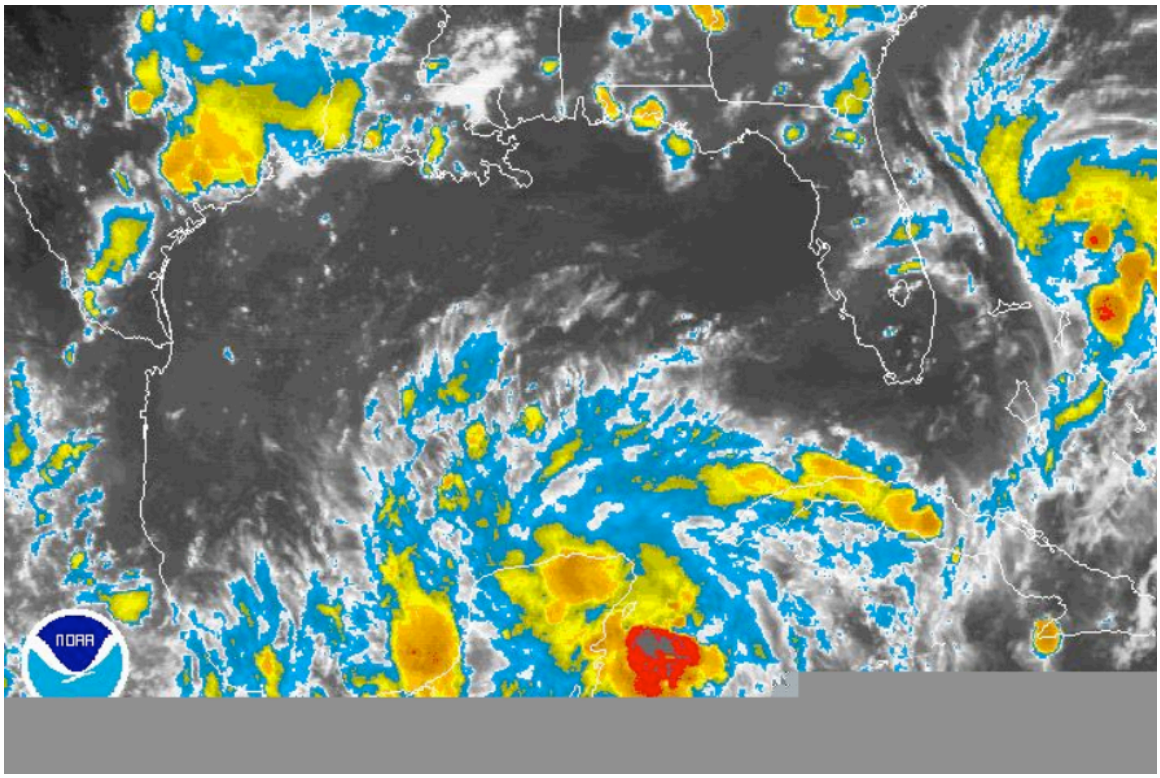

Fig. 8: IR satellite imagery near 00 UTC 22 July.

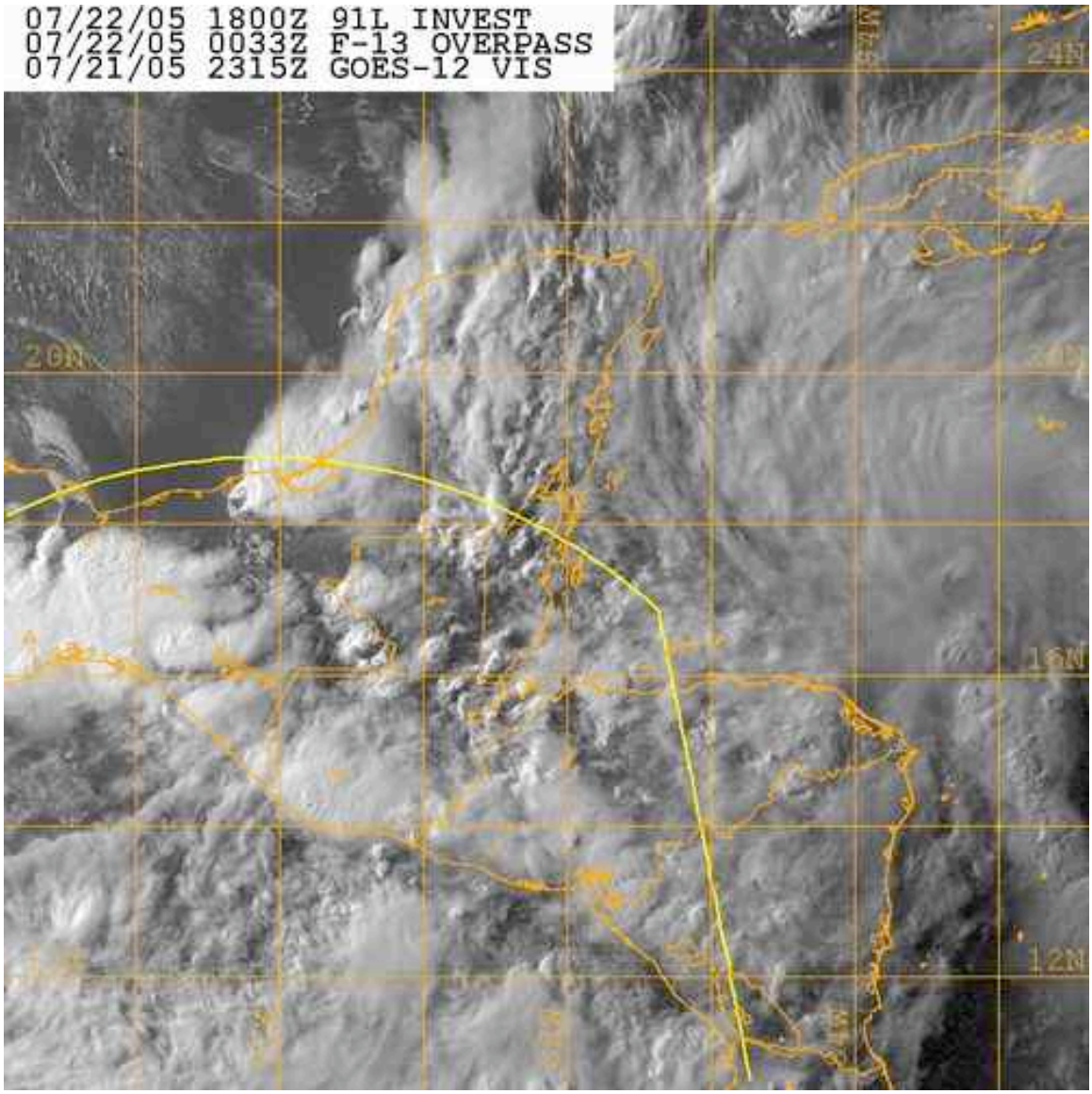

Fig. 9: GOES Visible satellite imagery at 2315 UTC 21 July, a few hours before N43's flight.

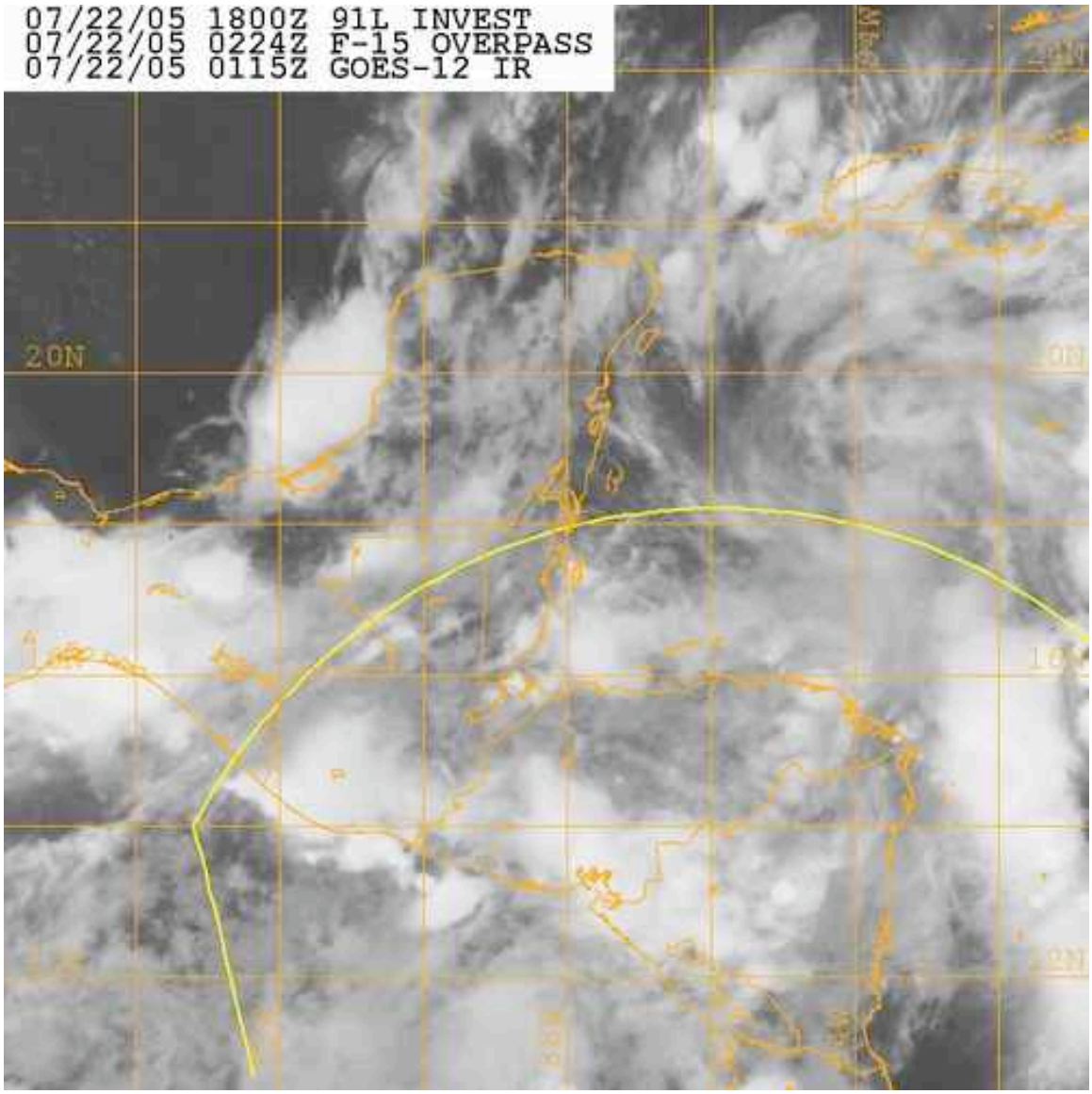

Fig. 10: IR satellite imagery at 0115 UTC and microwave imagery at 0755 UTC 16 July at the beginning of N43's flight.

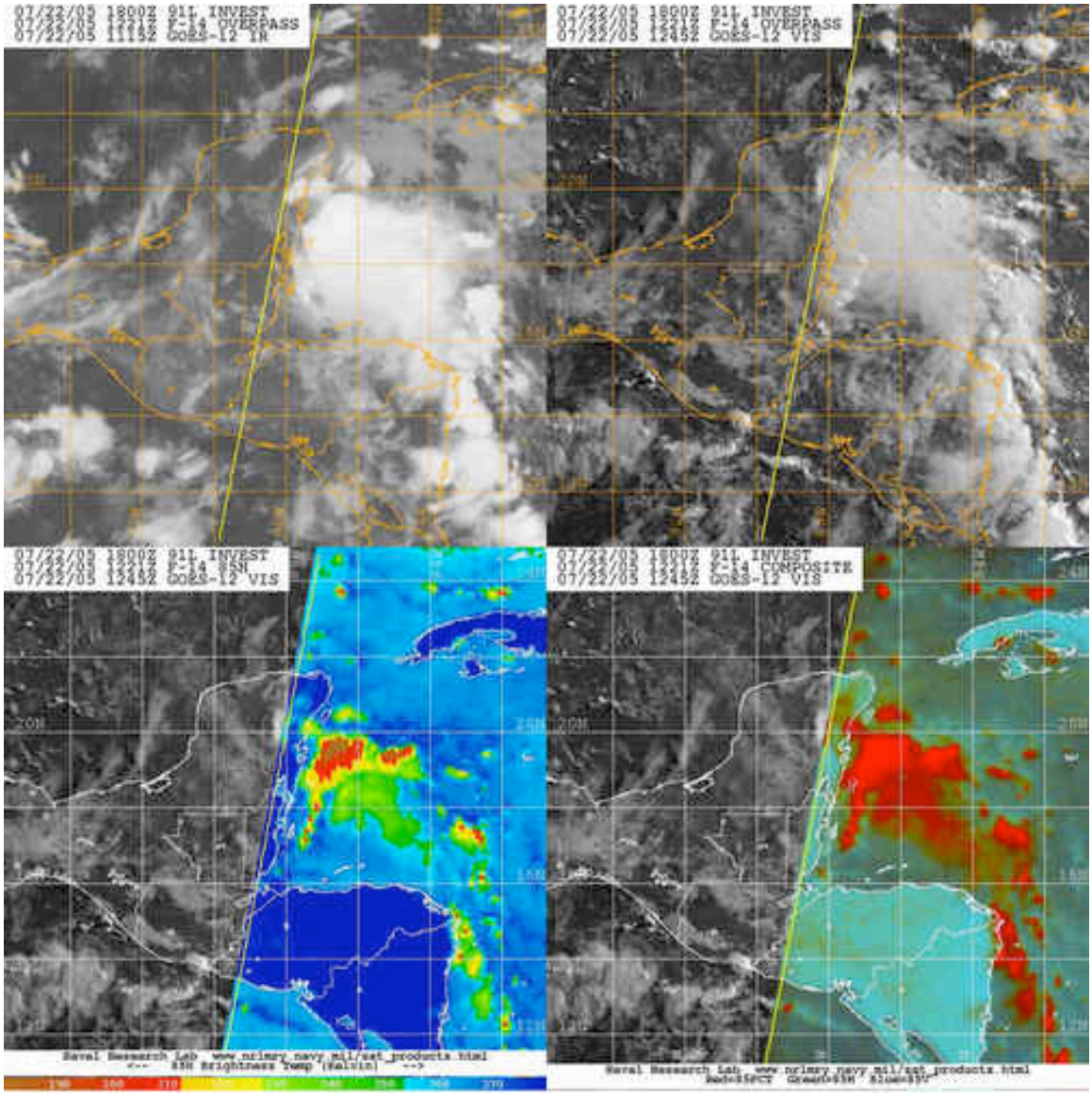

Fig. 11: Visible satellite imagery at 1245 UTC and microwave imagery at 1221 UTC 22 July right after N43's flight.